

STATE WATER RESOURCES CONTROL BOARD  
**RESOLUTION NO. 2004-0031**

AUTHORIZING A RESOLUTION ADOPTING EMERGENCY REGULATIONS  
THAT DEFINE THE TERM “INTERSTITIAL LIQUID LEVEL MEASUREMENT”  
AS USED TO DESCRIBE A MEANS OF LEAK DETECTION FOR  
UNDERGROUND STORAGE TANKS

WHEREAS:

1. Underground tanks used for the storage of hazardous substances and wastes are potential sources of contamination of the ground and underlying aquifers, and may pose other dangers to public health and the environment.
2. The State Water Resources Control Board (SWRCB) administers the Underground Storage Tank (UST) Program, and local agencies implement the program through UST permitting and enforcement.
3. Health and Safety Code Section 25299.3 of Chapter 6.7 authorizes the SWRCB to adopt regulations to implement Chapter 6.7.
4. In September 2002, the Legislature amended Chapter 6.7 by enacting Assembly Bill (AB) No. 2481 (stats. 2002, ch. 999), which established more stringent construction and monitoring standards for UST systems installed on or after July 1, 2004, including the use of “interstitial liquid level monitoring” for release detection.
5. There have been a variety of interpretations of the term “interstitial liquid level measurement”, some of which do not offer the same level of environmental protection or reliable leak detection as was envisioned when AB 2481 was written.
6. To ensure that the environment is adequately protected from releases of hazardous substances from UST systems, it is imperative that the term “interstitial liquid level measurement method” be defined in regulation prior to the July 1, 2004 effective date of the statutory requirement for new continuous monitoring methods.
7. Government Code section 11346.1 provides for the adoption of emergency regulations when necessary for the immediate preservation of the public peace, health, safety or general welfare.
8. The SWRCB has determined that it is appropriate and desirable to adopt the UST emergency regulations identified in the finding of emergency and the final proposed text, and that no revisions to the final proposed text are necessary.

THEREFORE BE IT RESOLVED THAT:

The SWRCB adopts the proposed Underground Storage Tank emergency regulations to implement, interpret, and make specific Chapter 6.7 of Division 20 of the Health and Safety Code, which will become effective as provided by the California Administrative Procedures Act upon approval by the Office of Administrative Law and filing with the Secretary of State, and directs the Executive Director to submit the proposed emergency regulations to the Office of Administrative Law for approval.

#### **CERTIFICATION**

The undersigned, Administrative Assistant to the Board, does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on May 20, 2004.

  
Debbie Irvin  
Clerk to the Board

**STATE WATER RESOURCES CONTROL BOARD  
UNDERGROUND STORAGE TANK REGULATIONS  
TITLE 23 DIVISION 3, CHAPTER 16  
ADOPTION OF EMERGENCY REGULATIONS  
DEFINITION OF “INTERSTITIAL LIQUID LEVEL MEASUREMENT” METHOD**

**FINDING OF EMERGENCY**

The State Water Resources Control Board (SWRCB) finds that an emergency exists, and that the foregoing regulation, or amendment to the regulation, is necessary for the immediate preservation of the public peace, health and safety, or general welfare.

**Specific Facts Showing the Need for Immediate Action**

Recently there has been significant debate about the meaning of the term “interstitial liquid level measurement” (ILLM) method as specified in Health and Safety Code (H&SC) section 25290.1(e), added by Assembly Bill 2481 (stats. 2002, ch. 999). Debate has centered around which monitoring methods fit within the intended use of the term ILLM. To clarify the regulatory status of proposed ILLM methods prior to the effective date of the new underground storage tank (UST) requirements, July 1, 2004, the SWRCB is proposing an emergency rulemaking to define ILLM. The purpose is to ensure that only ILLM methods that meet the performance goal of AB 2481 are allowed for USTs installed on or after July 1, 2004.

It is imperative that the term “interstitial liquid level measurement method” be defined in regulation prior to the effective date of the statutory requirement for new continuous monitoring methods. Immediate action is required to preserve general welfare, because if the definition is not in place by July 1, 2004, owners and operators could choose to use for their pressurized piping one of the ILLM methods for continuous monitoring that does not meet the AB 2481 performance goal and could potentially be later forced to replace their monitoring systems at great expense. Furthermore, it would be difficult for local regulatory agencies to provide consistent implementation of AB 2481 without a regulatory definition of ILLM. Finally, immediate action is required to preserve the public health and safety, because the installation of inadequate monitoring methods could result in undetected releases to the environment with potential contamination of the waters of the state, in opposition to the environmental performance goals specified by the Legislature in AB 2481.

**Authority and Reference Citations**

Authority: Section 25299.3, Health and Safety Code.

Reference: Section 25290.1(e), Health and Safety Code

**Informative Digest**

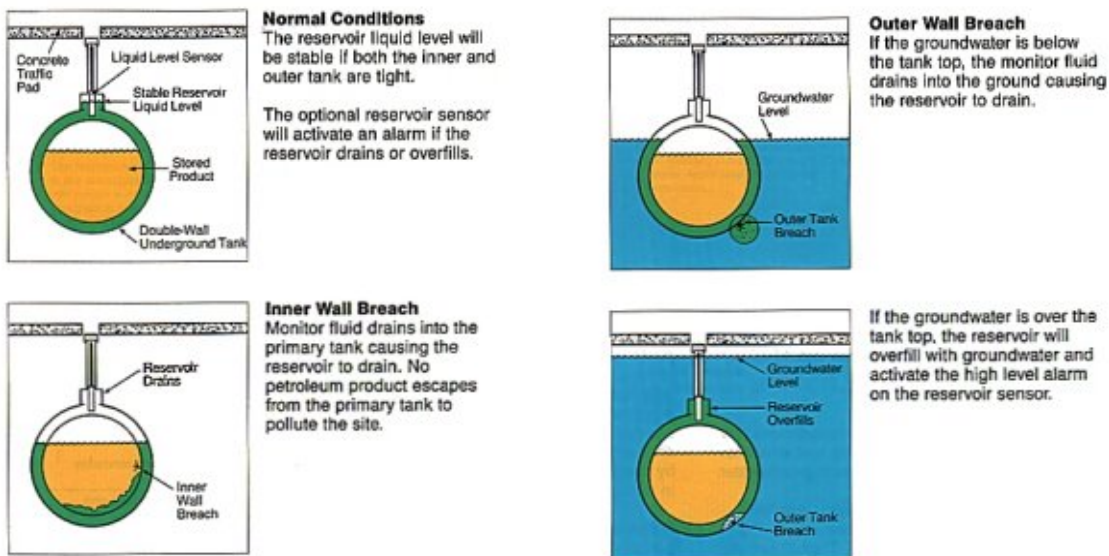
California’s Legislature enacted Chapter 6.7 of the H&SC in 1984. Since then, it has amended Chapter 6.7 in response to federal mandates relating to underground storage tanks (USTs), or to new information regarding changing industry practices and/or the performance of USTs meeting then current UST regulatory standards in California. In 2002, in response to findings of widespread vapor releases from USTs in California, the Legislature passed AB 2481. AB 2481 required significantly improved continuous monitoring methods for newly-installed USTs,

specifically that the interstitial space be maintained under vacuum or pressure. Significantly, AB 2481 set forth a performance standard that “a breach in the primary or the secondary is detected before the liquid- or vapor-phase of the hazardous substance stored in the underground storage tank is released into the environment.” (Health & Saf. Code, § 25290.1, subd. (e).)

Although vacuum and pressure continuous monitoring methods have been reliably used for decades in Europe, they are relatively new to California. Due to concerns about availability of approved vacuum or pressure methods, the Legislature passed Assembly Bill 1702 (stats. 2003, ch.42), postponing the effective date for this requirement to July 1, 2004.

At the time of development of AB 2481, a well-established method for monitoring tanks was available in California, the “brine tank” monitoring method, also referred to as “hydrostatic” or “interstitial liquid level measurement” (ILLM) method. (See the Figure for a typical brine tank (please note that the reservoir sensor and alarm are required, not optional, in California). Brine tanks rely on a positive head pressure within the interstitial space that is greater than the stored substance under operating conditions within the primary containment. This positive head pressure is maintained through use of a liquid reservoir atop the tank that triggers an alarm if the reservoir level falls significantly. This type of monitoring relies on the fact that the liquid level within the interstice is always higher than that within the primary tank. The higher liquid level results in a higher hydrostatic pressure within the interstice than in the primary tank. Depending on the level of groundwater surrounding the tank, the liquid level within the interstice would move up or down in the event of a leak. However, the hydrostatic pressure within the interstice ensures that the hazardous substance stored in the tank cannot escape to the environment without first activating an alarm. This approach ensures that any breach in the primary or the secondary containment will be detected before the hazardous substance is released to the environment. In recognition that the level of environmental protection of the brine tank method met the stated performance standard, AB 2481 was amended to specifically allow the brine tank method for newly-installed USTs by stating that the “use of interstitial liquid monitoring methods satisfies the requirements of this subdivision.”

**Figure – Typical “Brine Tank” Monitoring System**



After AB 2481 was enacted, certain manufacturers proposed to market other ILLM methods, specifically for monitoring of pressurized piping, not contemplated when the bill was developed. Certain of these proposed ILLM methods for pressurized piping do not maintain a head pressure within the interstitial space that is greater than operating conditions within the primary containment, as is the case for brine tanks. A pressurized piping system typically operates between 30 and 45 pounds per square inch (psi), whereas the pressure proposed to be maintained in the interstice and reservoir would be only 0.5 psi, rather than overpressured, as for brine tanks.

ILLM methods that do not maintain the interstice at greater pressure than that found within the primary containment do not offer the same level of environmental protection or reliable leak detection as the brine tanks envisioned when AB 2481 was written. If there were simultaneous breaches in the primary and secondary containment of pressurized piping and if the rate of flow out of the primary containment were similar to the rate of flow out of the secondary containment, there might not be enough volumetric change of liquid in the reservoir for the leak to be detected. This leak scenario could continue without detection even under normal system operation, if the leak rates in both primary and secondary containment closely matched the operating parameters of the system. Such methods would not fulfill the performance standard stated in AB 2481 that “a breach in the primary or secondary containment is detected before the liquid- or vapor-phase of the hazardous substance stored in the underground storage tank is released into the environment.” Nevertheless, because the methods rely on interstitial liquids for monitoring, the manufacturers argue that they are acceptable pursuant to AB 2481. This has led to confusion regarding the regulatory status of these methods.

Monitoring of this type does not provide the same level of environmental protection as the interstitial liquid level measurement method in use at the time AB 2481 was written and adopted. Furthermore, monitoring of this type cannot always detect breaches in the primary or secondary containment before the hazardous substance stored in the underground storage tank is released into the environment, as is required by AB 2481. Therefore, it is important to clarify in regulation that the term “interstitial liquid level measurement” refers to a system that maintains the interstice at a pressure greater than that found in the primary containment of the component being monitored.

The proposed regulations will clearly define the term “interstitial liquid level measurement method” as used in section 25290.1(e) of the Health and Safety Code. Having a clear definition of this term in regulations will promote consistent application of this requirement by local regulatory agencies throughout the state. It will also forestall the installation of interstitial liquid level measurement methods that do not meet the proposed regulatory definition, thus helping to ensure that the environment is adequately protected from releases of hazardous substances from UST systems. This regulation would not impact existing UST facilities, and would not affect the design or future applicability of the hydrostatic monitoring systems that have been used for many years on tanks.

The SWRCB is requesting that the Office of Administrative Law (OAL) approve the adoption of these regulations to become effective **May XX, 2004**. This precedes the statutory deadline established by Assembly Bills 2481 and 1702, and is necessary for the immediate preservation of the public peace, health, safety and general welfare.

### **Comparable Federal Regulations or Statutes**

Because there is no federal requirement for interstitial liquid level monitoring, there are no existing comparable federal regulations or statutes.

### **Mandate on Local Agencies or School Districts**

The SWRCB has determined that the proposed regulations would not impose a mandate on local agencies or school districts nor are there any costs for which reimbursement is required by Part 7 (commencing with Section 17500) of Division 4 of the Government Code.

### **Fiscal Impact Estimates**

The SWRCB and the Regional Water Quality Control Boards will not incur additional costs as a result of the proposed emergency regulations.

### **Federal Funding to the State**

The SWRCB has determined that the regulation will involve no costs or savings in federal funding to the State.

**STATE WATER RESOURCES CONTROL BOARD  
UNDERGROUND STORAGE TANK REGULATIONS  
TITLE 23, DIVISION 3, CHAPTER 16, CALIFORNIA CODE OF REGULATIONS**

**AMENDMENTS TO UNDERGROUND STORAGE TANK REGULATIONS**

**TEXT OF REGULATIONS**

*Amend Title 23, Division 3, Chapter 16, of the California Code of Regulations to read as follows:*

**Article 1. Definition of Terms**

**§ 2611. Additional Definitions**

Unless the context requires otherwise, the following definitions shall apply to terms used in this chapter.

Unless the context requires otherwise, the following definitions shall apply to terms used in this chapter.

"Bladder system" means a flexible or rigid material, which provides primary containment including an interstitial monitoring system designed to be installed inside an existing underground storage tank.

"Best management practice" means any underground storage tank system management and operation practice that is the most effective and practicable method of preventing or reducing the probability of a release.

"Cathodic protection tester" means any individual who can demonstrate an understanding of the principles and measurements of all common types of cathodic protection systems as applied to buried or submerged metallic piping and underground storage tank systems. Such an individual shall possess a current certificate from the National Association of Corrosion Engineers or the International Code Council, demonstrating education and experience in soil resistivity, stray current, structure-to-soil potential, and component electrical isolation measurements of buried or submerged metallic piping and underground storage tank systems.

"Coatings expert" means a person who, by reason of thorough training, knowledge and experience in the coating of metal surfaces, is qualified to engage in the practice of internal tank lining inspections. The term includes only those persons who are independent of any lining manufacturer or applicator and have no financial interest in the tank or tanks being monitored.

"Compatible" means the ability of two or more substances to maintain their respective physical and chemical properties upon contact with one another for the design life of the tank system under conditions likely to be encountered in the underground storage tank.

"Connected piping" means all underground piping including valves, elbows, joints, flanges, and flexible connectors attached to a tank system through which hazardous substances flow. For the purpose of determining how much piping is connected to any individual underground storage tank system, the piping that joins two underground storage tank systems should be allocated equally between them.

"Continuous monitoring" means a system using equipment which routinely performs the required monitoring on a periodic or cyclic basis throughout each day.

"Corrosion specialist" means any individual who, by reason of thorough knowledge of the physical sciences and the principles of engineering and mathematics acquired by a professional education and related practical experience, is qualified to engage in the practice of corrosion control on buried or submerged metallic piping and underground storage tank systems. Such an individual shall possess a current certificate from the National Association of Corrosion Engineers as a corrosion specialist, or be a registered professional engineers with a current certificate or license requiring education and experience in corrosion control of buried or submerged metallic piping and underground storage tank systems.

"Decommissioned tank" means an underground storage tank, which cannot be used for one or more of the following reasons: 1) the tank has been filled with an inert solid; 2) the fill pipes have been sealed; or, 3) the piping has been removed.

"Designated underground storage tank operator" or "designated UST operator" means one or more individuals designated by the owner to have responsibility for training facility employees and conducting monthly visual inspections at an underground storage tank facility. A "designated UST operator" is not considered the "operator" as defined in Chapter 6.7 of Division 20 of the Health and Safety Code, although the same individual may hold both positions.

"Dispenser" means an aboveground or underground device that is used for the delivery of a hazardous substance from an underground storage tank. Dispenser includes metering and delivery devices, and fabricated assemblies located therein.

"Emergency containment" means a containment system for accidental spills, which are infrequent and unpredictable.

"Excavation zone" means the volume containing the tank system and backfill material bounded by the ground surface, walls, and floor of the pit and trenches into which the underground storage tank system is placed at the time of installation.

"Existing underground storage tank" means an underground storage tank installed prior to January 1, 1984. The term also includes an underground storage tank installed before January 1, 1987 and which is located on a farm, has a capacity greater than 1,100 gallons, and stores motor vehicle fuel used primarily for agricultural purposes and not for resale.



“Facility employee” means an individual who is employed on-site at an underground storage tank facility, and who may be called upon to respond to spills, overfills, or other problems associated with the operation of the underground storage tank system. A “facility employee” is not considered the “operator” as defined in Chapter 6.7 of Division 20 of the Health and Safety Code, although the same individual may hold both positions.

“Fail safe” means that a monitoring system will shut down the turbine pump in the event of a power outage, or when the monitoring system fails or is disconnected.

"Farm tank" means any one tank or a combination of manifolded tanks that: 1) are located on a farm; and, 2) holds no more than 1,100 gallons of motor vehicle fuel which is used primarily for agricultural purposes and is not held for resale.

"First ground water" means the uppermost saturated horizon encountered in a bore hole.

"Free product" refers to a hazardous substance that is present as a non- aqueous phase liquid (e.g., liquid not dissolved in water).

"Ground water" means subsurface water, which will flow into a well.

"Hazardous substance" means a substance, which meets the criteria of either subsection (1) or subsection (2) of section 25281(f) of the Health and Safety Code.

"Heating oil tank" means a tank located on a farm or at a personal residence and which holds no more than 1,100 gallons of home heating oil, which is used consumptively at the premises where the tank is located.

"Holiday," when used with respect to underground storage tank coating or cladding, means a pinhole or void in a protective coating or cladding.

"Hydraulic lift tank" means a tank holding hydraulic fluid for a closed loop mechanical system that uses compressed air or hydraulic fluid to operate lifts, elevators, and other similar devices.

"Inconclusive" means the conclusion of a statistical inventory reconciliation report that is not decisive as to whether a release has been detected.

"Independent testing organization" means an organization which tests products or systems for compliance with voluntary consensus standards. To be acceptable as an independent testing organization, the organization shall not be owned or controlled by any client, industrial organization, or any other person or institution with a financial interest in the product or system being tested. For an organization to certify, list, or label products or systems in compliance with voluntary consensus standards, it shall maintain formal periodic inspections of production of products or systems to ensure that a listed, certified, or labeled product or system continues to meet the appropriate standards.

"Independent third party" means independent testing organizations, consulting firms, test laboratories, not-for-profit research organizations and educational institutions with no financial interest in the matters under consideration. The term includes only those organizations, which are not owned or controlled, by any client, industrial organization, or any other institution with a financial interest in the matter under consideration.

"Integral secondary containment" means a secondary containment system manufactured as part of the underground storage tank.

**“Interstitial Liquid Level Monitoring Method” or “Hydrostatic Monitoring Method” means a release detection method that continuously monitors the liquid level within a liquid-filled interstitial space of an underground storage tank. The term includes only those release detection systems that are capable of detecting a breach in the primary or secondary containment of the underground storage tank component(s) being monitored before the hazardous substance stored is released to the environment. To accomplish this, the liquid in the interstitial space shall be maintained at a pressure greater than the operating pressure found within the component(s) being monitored. This pressure may be achieved, for example, by adequately elevating the liquid reservoir or by pressurizing the liquid-filled interstice. Hydrostatic monitoring methods shall meet the requirements of section 2643, subdivision (f).**

"Interstitial space" means the space between the primary and secondary containment systems.

"Leak threshold" means the value against which test measurements are compared and which serves as the basis for declaring the presence of a leak. The leak threshold is set by the manufacturer in order to meet state and federal requirements. Leak threshold is not an allowable leak rate.

"Liquid asphalt tank" means an underground storage tank, which contains steam-refined asphalts.

"Liquefied petroleum gas tank" means an underground storage tank, which contains normal butane, isobutane, propane, or butylene (including isomers) or mixtures composed predominantly thereof in a liquid or gaseous state having a vapor pressure in excess of 40 pounds per square inch absolute at a temperature of 100 degrees Fahrenheit.

"Maintenance" means the normal operational upkeep to prevent an underground storage tank system from releasing hazardous substances.

"Manufacturer" means any business which produces any item discussed in these regulations.

"Manual inventory reconciliation" means a procedure for determining whether an underground tank system is leaking based on bookkeeping calculations, using measured throughput and a series of daily inventory records taken manually by the tank owner or operator or recorded electronically. This term does not include procedures, which are based on statistical inventory reconciliation.

"Membrane liner" means any membrane sheet material used in a secondary containment system. A membrane liner shall be compatible with the substance stored.

"Membrane liner fabricator" means any company, which converts a membrane liner into a system for secondary containment.

"Membrane manufacturer" means any company, which processes the constituent polymers into membrane sheeting from which the membrane liner is fabricated into a system for secondary containment.

"Motor vehicle" means a self-propelled device by which any person or property may be propelled, moved, or drawn.

"Motor vehicle fuel tank" means an underground storage tank that contains a petroleum product. The definition does not include underground storage tanks that contain used oil.

"New underground storage tank" means an underground storage tank, which is not an existing underground storage tank.

"Non-volumetric test" means a tank integrity test method that ascertains the physical integrity of an underground storage tank through review and consideration of circumstances and physical phenomena internal or external to the tank.

"Operational life" means the period beginning when installation of the tank system has begun until the time the tank system should be properly closed.

"Operator" means any person in control of, or having responsibility for, the daily operation of an underground storage tank system.

"Person", as defined in Chapter 6.7 of Division 20 of the Health and Safety Code includes any entity defined as a person under the Federal Act.

"Perennial ground water" means ground water that is present throughout the year.

"Petroleum" means petroleum including crude oil, or any fraction thereof, which is liquid at standard conditions of temperature and pressure, which means at 60 degrees Fahrenheit and 14.7 pounds per square inch absolute.

"Pipeline leak detector" means a continuous monitoring system for underground piping capable of detecting at any pressure, a leak rate equivalent to a specified leak rate and pressure, with a probability of detection of 95 percent or greater and a probability of false alarm of 5 percent or less.

"Probability of detection" means the likelihood, expressed as a percentage, that a test method will correctly identify a leaking underground storage tank.

"Probability of false alarm" means the likelihood, expressed as a percentage, that a test method will incorrectly identify a "tight" tank as a leaking underground storage tank.

"Qualitative release detection method" means a method which detects the presence of a hazardous substance or suitable tracer outside the underground storage tank being tested.

"Quantitative release detection method" means a method, which determines the integrity of an underground storage tank by measuring a release rate or by determining if a release exceeds a specific rate.

"Release detection method or system" means a method or system used to determine whether a release of a hazardous substance has occurred from an underground tank system into the environment or into the interstitial space between an underground tank system and its secondary containment.

"Repair" means to restore a tank or underground storage tank system component that has caused a release of a hazardous substance from the underground storage tank system.

"Septic tank" means a tank designed and used to receive and process biological waste and storage.

"Service technician" means any individual who installs or tests monitoring equipment, or provides maintenance, service, system programming or diagnostics, calibration, or troubleshooting for underground storage tank system components.

"Statistical inventory reconciliation" means a procedure to determine whether a tank is leaking based on the statistical analysis of measured throughput and a series of daily inventory records taken manually by the tank owner or operator or recorded electronically.

"Statistical inventory reconciliation provider" means the developer of a statistical inventory reconciliation method that meets federal and state standards as evidenced by a third-party evaluation conducted according to section 2643(f), or an entity that has been trained and certified by the developer of the method to be used. In either case, the provider shall have no direct or indirect financial interest in the underground storage tank being monitored.

"Storm water or wastewater collection system" means piping, pumps, conduits and any other equipment necessary to collect and transport the flow of surface water run-off resulting from precipitation, or domestic, commercial, or industrial wastewater to and from retention areas or any areas where treatment is designated to occur. The collection of storm water and wastewater does not include treatment except where incidental to conveyance.

"Substantially beneath the surface of the ground" means that at least 10 percent of the underground tank system volume, including the volume of any connected piping, is below the ground surface or enclosed below earthen materials.

"Sump," "pit," "pond," or "lagoon" means a depression in the ground which lacks independent structural integrity and depends on surrounding earthen material for structural support of fluid containment.

"Tank integrity test" means a test method that can ascertain the physical integrity of any underground storage tank. The term includes only test methods which are able to detect a leak of 0.1 gallons per hour with a probability of detection of at least 95 percent and a probability of false alarm of 5 percent or less. The test method may be either volumetric or non-volumetric in nature. A leak rate is reported using a volumetric test method, whereas, a non- volumetric test method reports whether a substance or physical phenomenon is detected which may indicate the presence of a leak.

"Unauthorized release" as defined in Chapter 6.7 of Division 20 of the Health and Safety Code does not include intentional withdrawals of hazardous substances for the purpose of legitimate sale, use, or disposal.

"Under-Dispenser Containment" means secondary containment that is located under a dispenser.

"Under-Dispenser spill containment or control system" means a device that is capable of preventing an unauthorized release from under the dispenser from entering the soil or groundwater or both.

"Upgrade" means the addition or retrofit of some systems such as cathodic protection, lining, secondary containment, or spill and overfill controls to improve the ability of an underground storage tank system to prevent the release of hazardous substances.

"Volumetric test" means a tank integrity test method that ascertains the physical integrity of any underground storage tank through review and comparison of tank volume.

"Voluntary consensus standards" means standards that shall be developed after all persons with a direct and material interest have had a right to express a viewpoint and, if dissatisfied, to appeal at any point (a partial list of the organizations that adopt voluntary consensus standards are shown in Appendix I, Table B).

"Wastewater treatment tank" means a tank designed to treat influent wastewater through physical, chemical, or biological methods and which is located inside a public or private wastewater treatment facility. The term includes untreated wastewater holding tanks, oil water separators, clarifiers, sludge holding tanks, filtration tanks, and clarified water tanks that do not continuously contain hazardous substances.

Authority cited: Sections 25299.3 and 25299.7, Health and Safety Code.

Reference: Sections 25281, 25282, 25283, 25284, 25284.1, **25290.1**, 25292.3 and 25299.5(a), Health and Safety Code; 40 CFR 280.10 and 280.12.